In the Claims

1 (currently amended). A method of determining if active bioremediation activity is occurring at a site comprising:

a) contacting a microbial community at a subsurface site or down-well groundwater site with a sterile solid support loaded or coated with ~~a substrate~~ an isotope enriched substrate;

b) incubating said solid support in said site for a period of time sufficient to establish a biofilm of microbes from said microbial community on said solid support;

c) identifying biomarkers obtained from the microbes on said solid support into which ~~components of~~ isotopes from said substrate have been incorporated; and

d) correlating the biomarkers containing ~~components of~~ isotopes from said substrate with particular microbes or subsets of microbial organisms known to cause bioremediation to determine if active bioremediation is occurring at said site.

2 (original). The method according to claim 1, wherein said biomarkers are selected from the group consisting of lipids, nucleic acids, proteins, and carbohydrates.

3 (previously presented). The method according to claim 1, wherein said biomarkers are respiratory quinones, diglycerides, sterols, intact phospholipids, poly beta–hydroxyalkonates, archaeol and caldarchaeols, ornithine lipids, sphingolipids, carotenoides, glycerides, glycolipids, gangliosides, eicosanoids, hopanes, isoprenoids, terpenes, fatty acids, fatty alcohols, waxes, fatty aldehydes, proteolipids or lysolipids.

4 (previously presented). The method according to claim 2, wherein said biomarkers are characteristic of a subset of microbial organisms.

5 (previously presented). The method according to claim 3, wherein said biomarkers are characteristic of a subset of microbial organisms.

6 (currently amended). The method according to claim 1, wherein said component is an isotope selected from $^{2}H$, $^{13}C$, $^{15}N$, an isotope as set forth in Table 1 or a naturally occurring isotope~~; a) an isotope selected from $^{2}H$, $^{13}C$, $^{15}N$, an isotope as set forth in Table 1 or a naturally occurring isotope; or b) a nutrient that is incorporated into a biomarker~~.

7 (canceled).

8 (previously presented). The method according to claim 1, wherein the biomarkers are identified by one or more of the following methods: pyrolysis, optionally with *in situ* derivatization and isotope ratio mass spectrometry, phospholipids fatty acid (PFLA) analysis, polymerase chain reaction denaturing gradient gel electrophoresis (PCR-DGGE), expanded signature lipid biomarker analysis (SLB), terminal restriction fragment length polymorphism (T-RFLP) analysis of 16S rDNA or specific genes, high performance/atmospheric pressure chemical ionization/tandem mass spectrometry (HPLC/APCI/MS/MS) or liquid chromatography/tandem mass spectrometry (LC/MS/MS).

9 (currently amended). A method of identifying the microbial community at a site comprising:

a) contacting a microbial community at a subsurface site or down-well groundwater site with a sterile solid support loaded or coated with ~~a substrate~~ an isotope enriched substrate;

b) incubating said solid support in said site for a period of time sufficient to establish a biofilm of microbes from said microbial community on said solid support;

c) identifying biomarkers obtained from the microbes on said solid support into which isotopes from ~~components of~~ said substrate have been incorporated; and

d) identifying the microbes present at said site by analyzing the biomarkers and associating ~~component~~ isotope containing biomarkers with particular microbes or subsets of microbial organisms.

10 (original). The method according to claim 9, wherein said biomarkers are selected from the group consisting of lipids, nucleic acids, proteins, and carbohydrates.

11 (previously presented). The method according to claim 9, wherein said biomarkers are respiratory quinones, diglycerides, sterols, intact phospholipids, poly beta–hydroxyalkonates, archaeol and caldarchaeols, ornithine lipids, sphingolipids, carotenoides, glycerides, glycolipids, gangliosides, eicosanoids, hopanes, isoprenoids, terpenes, fatty acids, fatty alcohols, waxes, fatty aldehydes, proteolipids or lysolipids.

12 (previously presented). The method according to claim 10, wherein said biomarkers are characteristic of a subset of microbial organisms.

13 (previously presented). The method according to claim 11, wherein said biomarkers are characteristic of a subset of microbial organisms.

14 (currently amended). The method according to claim 9, wherein said component is an isotope selected from $^{2}H$, $^{13}C$, $^{15}N$, an isotope as set forth in Table 1 or a naturally occurring isotope; ~~a) an isotope selected from $^{2}H$, $^{13}C$, $^{15}N$, an isotope as set forth in Table 1 or a naturally occurring isotope; or b) a nutrient that is incorporated into a biomarker~~.

15 (canceled).

16 (previously presented). The method according to claim 9 wherein the biomarkers are identified by one or more of the following methods: pyrolysis, optionally with *in situ* derivatization and isotope ratio mass spectrometry, phospholipids fatty acid (PFLA) analysis, polymerase chain reaction denaturing gradient gel electrophoresis (PCR-DGGE), expanded signature lipid biomarker analysis (SLB), terminal restriction fragment length polymorphism (T-RFLP) analysis of 16S rDNA or specific genes, high performance/atmospheric pressure chemical ionization/tandem mass spectrometry (HPLC/APCI/MS/MS) or liquid chromatography/tandem mass spectrometry (LC/MS/MS).

17 (previously presented). The method according to claim 1, wherein said site is a down-well groundwater site.

18 (previously presented). The method according to claim 1, wherein said site is a subsurface site.

19 (previously presented). The method according to claim 6, wherein said component is an isotope.

20 (previously presented). The method according to claim 6, wherein said component is a nutrient.

21 (previously presented). The method according to claim 9, wherein said site is a down-well groundwater site.

22 (previously presented). The method according to claim 9, wherein said site is a subsurface site.

23 (previously presented). The method according to claim 14, wherein said component is an isotope.

24 (canceled).